

Applicant: Vesa Ahvenniemi et al.
Application No.: 10/533,626
Response to Office action dated Aug. 2, 2007
Response filed August 27, 2007

Claim Listing

- 1-21. (cancelled)
22. (currently amended) A paper machine incorporating on line finishing, comprising:
- a paper machine having a dryer section;
 - a first finishing stage, positioned after the dryer section, the first finishing stage comprising: a precalender followed by[;]] a first cutting equipment positioned within [[an]] a first open draw leading in to for forming a tail from a fully wide paper web; tail threading equipment arranged to take a formed tail through the first finishing stage; a first draw point, the first draw point comprising: only a single dryer cylinder and a single drying wire wrapping an upper portion of the single dryer cylinder, the single drying cylinder and single drying wire forming a path to broke treatment after the single drying wire leaves the single dryer cylinder, the first draw point arranged to forming a single contact for[[,]] tension tensioning and hold holding [[the]] a paper web[[,]];
 - in the first finishing stage [[and]], prior to the draw point, and after the precalender, a plurality of measuring elements, of the type which measure at least one specific paper property and are arranged to measure a paper web before the first draw point; and a controller in data receiving relation to the measuring elements, and in controlling relation to the precalender;
 - wherein the [[the]] first finishing stage is arranged so that the precalender can be adjusted to selected production settings while running a full width web; and
 - a second finishing stage[[,]] positioned after the first finishing stage, the second finishing stage comprising: a coater followed by[;]] a second cutting equipment positioned within a second open draw leading in to a second draw point, the second draw point comprising: only a single dryer cylinder and a

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single drying wire wrapping an upper portion of the single dryer cylinder, the single drying cylinder and single drying wire forming a path to broke treatment after the single drying wire leaves the single dryer cylinder, the second draw point arranged to for forming a tail from a fully wide paper web; tail threading equipment arranged to take a formed tail through the second finishing stage; a second draw point forming a single contact for tension tensioning and hold holding the a paper web[[, and]] in the second finishing stage;
prior to the second draw point, a plurality of measuring elements, of the type which measure at least one specific paper property and are arranged to measure a paper web before the second draw point; and a controller in data receiving relation to the measuring elements, and in controlling relation to the coater;
wherein the second finishing stage is arranged so that the coater can be adjusted to selected production settings while running a full with web.

23. (currently amended) The apparatus of claim 22, wherein the first cutting equipment ~~is arranged prior to the draw point and~~ is a water cutter.

24. (currently amended) The apparatus of claim 22, wherein the second cutting equipment ~~is arranged prior to the draw point and~~ is a water cutter.

25–33. (canceled)

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34. (currently amended) A method of on-line finishing in a paper machine, comprising the steps of:

after a drying section which ends actual production of a paper web on the paper machine, forming a first tail from the paper web and threading the first tail through a precalender ~~forming in~~ a first finishing stage, the first finishing stage tensioning and holding the paper web with a first draw point formed between a single dryer roll and a single drying wire which holds the paper web between the single dryer wire and the single dryer roll which is the only drawing point between the pre-calendar and the first draw point ~~by a single contact, the first draw point defining a first downstream end;~~

spreading the first tail to a full width web in the precalender;

precalendering the paper web in the precalender;

determining selected paper web properties at or prior to the first draw point;

setting the precalender to production settings based on the determined paper web properties;

in the first finishing stage, until the precalender is set to the production settings, guiding the paper web to broke treatment immediately after the first draw point;

following setting the precalender to production settings, forming a second tail from the paper web in an open draw leading into the first drawing point and threading the second tail through a coater[[,]] ~~forming in~~ a second finishing stage, the second finishing stage tensioning and holding the paper web with a second draw point formed between a single dryer roll and a single drying wire which holds the paper web between the single dryer wire and the single dryer roll which is the only draw point between the coater and the second draw point ~~formed by a single contact, the second draw point defining a second downstream end;~~

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spreading the second tail to a full width web in the coater;
coating the paper web in the coater to form a coated paper web;
determining selected coated paper web properties at or prior to the second draw point;
setting the coater to production settings based on the determined coated paper web properties;
in the second finishing stage, until the coater is set to the production settings, guiding the coated paper web to broke treatment immediately after the second draw point; and
reeling the coated paper web.

35. (previously presented) The method of claim 34, further comprising the steps of:

following setting the coater to production settings, and before reeling the paper web, forming a third tail from the paper web and threading the third tail through a calender, forming a third finishing stage end;
spreading the third tail to a full width web in the calender;
calendering the paper web in the calender; and
setting the calender to production settings, followed by the step of reeling the paper web.

36. (previously presented) The method of claim 34, further comprising the step of changing properties of at least one of the first tail and the second tail, while forming said first tail and said second tail, so as to ensure successful threading of at least one of the first tail and the second tail.

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37. (new) A paper machine incorporating on line finishing, comprising:
after a dryer section a precalendering finishing stage, having a precalender;
after the precalendering finishing stage a coating finishing stage, having a coater;
after the coating finishing stage a reeling stage;
wherein the precalendering finishing stage and the coating finishing stage each has a
draw point having only a single dryer cylinder wrapped by only a single drying
wire, which is arranged to draw a paper web through each finishing stage;
wherein each draw point defines an open draw leading in to the draw point and a point
leading to broke treatment equipment;
a cutting equipment positioned within each open draw for forming a tail from a fully
wide paper web; and
measuring elements, of the type which measure at least one specific paper property
and are arranged to measure a paper web before each draw point, and after the
precalender or the coater.